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ABSTRACT

A collection of six papers on faculty development concerns is presented. In "The Scholar-Practitioner Dilemma," Robert J. Menges notes the dual roles of scholarship and teaching that faculty members confront and introduces the topics that are addressed by the other authors. Attention is directed to the processes involved in intellectual work. In "A Mathematician's Journey: From Applying the Pure to Purifying the Applied," Ronald A. Smith describes how his original training in mathematics affected his search for a conceptual framework and for research methods to work in faculty development. Robert E. Young notes in "Tanning My Hide with Research," that linking theory and behavior became both his intellectual quest and the problem on which he worked with faculty, and he describes research with teachers that focuses on their conceptions about teaching. "On Doing Intellectual Work: Grasping the Power of the Gestalt," by Rita Weathersby, outlines her concern with adult development, with special reference to students, and her interest in how conceptions of situations change and how such perspective shifts can be understood and facilitated. In "The Creativity of Being Marginal: A Style of Generating Research in Education," John D. W. Andrews brings a clinical perspective to his activities of teaching and faculty development, since his practitioner skills include psychotherapy. His concerns include the effects of tension and problem formulation, research procedures, and dissemination of findings. In "The Path of Passionate Inquiry: A Comment on Smith, Young, Weathersby, and Andrews," Michael M. Piechowski traces paths described by the authors. (SW)

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INTELLECTUAL JOURNEYS IN FACULTY DEVELOPMENT

Robert J. Menges, Editor

Occasional Paper Number 14

October 1981

THE CENTER FOR THE TEACHING PROFESSIONS

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CONTENTS

The Scholar-Practitioner Dilemma 1

Robert J. Menges

A Mathematician's Journey: From Applying the Pure to Purifying the Applied 9

Ronald A. Smith

Tanning My Hide with Research 29

Robert E. Young

On Doing Intellectual Work: Grasping the Power of the Gestalt 45

Rita Weathersby

The Creativity of Being Marginal: A Style of Generating Research in Education 65

John D. W. Andrews

The Path of Passionate Inquiry: A Comment on Smith, Young, Weathersby, and Andrews 81

Michael M. Piechowski

Publications of the Center for the Teaching Professions 93

HE 015 055

THE SCHOLAR-PRACTITIONER DILEMMA

Robert J. Menges

Northwestern University

Most of us who work in professional development are trained as scholar-practitioners. Like other academics, we were schooled to contribute to a discipline and we were expected (if not formally prepared) to practice the profession of teaching.

All scholar-practitioners feel tensions between those roles. Pressure to be productive scholars may reduce attention to teaching. The immediate demands of teaching may rob time from scholarship.

In professional and faculty development positions, expectations and rewards typically weigh more heavily toward practice than toward scholarship. Despite this dilemma, scholarly work in faculty development does get done, and these papers examine how such work is conceived and executed.

This topic has been a concern of the research committee of the Professional and Organizational Development Network in Higher Education (POD), especially during Bob Young's chairmanship. At the 1980 POD Conference, I organized a committee-sponsored session entitled "On Doing Intellectual Work: Trials, Tribulations, and Triumphs of Research on Faculty Development." The papers prepared for that session were subsequently revised and this monograph makes them more widely available.

Purpose of These Papers

All of us try to make sense of our experience and the experience of others. We experiment with alternative conceptualizations; we make predictions and seek evidence to support or refute those predictions. Some of us do this formally, professionally, and even get paid for the effort.

This intellectual work is usually shared with others only through its results: articles, reports, training materials, and so on. Seldom do we share descriptions of the processes which give birth to those products. In planning these papers, I asked the authors to describe and reflect on the processes of their intellectual work, in effect to share their intellectual journeys. I suggested that they comment, among other topics, on the following:

a. What issues do I define as central to my intellectual work and how were they sharpened and elaborated over time?

b. What forces shaped the specific research questions I have pursued? To what extent are these forces intrinsic and to what extent are they extrinsic?

c. What factors governed my choice of procedures for gathering and analyzing data?

d. What are my strategies for soliciting/cajoling/seducing the cooperation of those who provide data for my use, and how do I repay them?

e. What standards of scholarship do I require, given the compromises requires by applied research?

f. How do I attempt to influence other researchers and practitioners with the results of my work?

g. How do I protect time and space for formal intellectual work when there is so much else to do?

The first four papers show that despite differing interests, methods, and expectations about how their work influences others, the authors' journeys do have some themes in common. These similarities (as well as some differences) are elaborated in the fifth paper.

I hope that readers of these papers will be stimulated to think in new ways about scholarly work in professional development. I hope that interest in doing such work will be stimulated as well.

The Contributors

Ronald A. Smith is a member of the Department of Mathematics and Director of the Learning Development Office at Concordia University, Montreal. The major theme of his paper is how his original training in mathematics affected his search for a conceptual framework and for research methods appropriate to work in faculty development. His journey led from attempting to "apply the pure," under the influence of his mathematics training, to attempting to "purify the applied," that is, to seek conceptual clarity in the unkempt world of practice. He discusses in some detail the search for a "lovable" theory and the research which it produced.

Robert E. Young directs the Office of Instructional Development at the University of North Dakota in Grand Forks. Because he was trained in educational psychology, there is more apparent continuity between preparation and present work for him than for Smith. The linking of theory and behavior became both his own intellectual quest and the problem on which he worked with faculty. To illustrate, he describes research with teachers of composition which focuses on their conceptions about teaching.

Rita Weathersby is currently a faculty member in the Wittemore School of Business at the University of New Hampshire in Durham. Her formal faculty development experience comes from a variety of previous positions, and her intellectual work has involved the study of adult development, with special reference to students. Broadly stated, her concern is with how one's conceptions of situations change and how such perspective shifts can be understood and facilitated. By describing several of her research efforts, she

shows how her own perspectives have been affected as well as how she facilitated developmental transformations in others.

John D. W. Andrews directs the Teaching Assistant Development Program at the University of California, San Diego. His practitioner skills include not only those of teaching and faculty development but also those of psychotherapy. Consequently, he brings a clinical perspective to bear on his activities. Much of his research is stimulated by his own "marginality," being professionally at the borders of several worlds of content and practice. How marginality can generate creative research is well illustrated by his discussion of tension such as that between the experimental and the clinical. A number of his research projects illustrate the effects of tension on problem formulation, research procedures, and dissemination of findings.

Michael M. Piechowski teaches in the School of Education at Northwestern University. He holds doctorates in both biological science and counseling psychology and pursues a research interest in esthetics. Thus, his expertise spans the physical sciences, the social sciences, and the arts. From that vantage point he traces paths described by the authors and makes some intriguing observations about how their journeys converge and diverge.

Discontinuities Between Preparation and Practice

Piechowski asserts that the four authors are "struggling with tasks for which there can be no formal preparation." While I agree with his observation in the large sense, I also believe that there are identifiable skills of research and scholarship likely to be useful in professional development. Few of us, however, have backgrounds which maximize those skills.

What professional developers do amounts to applied behavioral science. Yet those with backgrounds in the physical sciences or humanities may lack familiarity with relevant literature and lack facility with appropriate research methods. (Paradoxically, however, they may be open to fresh insights as they "naively" experience this new field.) Those from the behavioral sciences are disadvantaged in a different way if their training has emphasized studies with experimental controls, large numbers, and quantitative analysis. Unfortunately, these features are seldom feasible in the field of professional development. More appropriate are intensive studies of a few cases with qualitative analysis using such tools as field notes, clinical interviews, and systematic observation. Each of these methods is learnable but its mastery requires the expenditure of significant time and energy.

Little is known about how persons in professional development acquire necessary research skills. It may be that under the press of circumstance there is insufficient time and support for adequate training. The alternative is to improvise (but improvisation quickly exceeds competence) or to cease formal scholarly work (one explanation for the relatively small body of literature produced by the field).

This may be the proper time for a study of the preparation and training needs of those in professional development with special attention to their scholarly role. An examination of the available opportunities for high quality training is also timely.

But for now, we move on with the stories of four persons who, despite quite different preparation, have successfully combined scholarship and practice.

A MATHEMATICIAN'S JOURNEY:

FROM APPLYING THE PURE TO PURIFYING THE APPLIED

Ronald A. Smith

Concordia University

Faculty development, as a relatively new enterprise in higher education, has attracted its practitioners from many different fields. In this paper I review some highlights of my journey from teaching calculus and numerical methods full time in a mathematics department (trying to help students see a wide range of applications of some very abstract theories) to now spending most of my time and energy running a faculty development office and doing research on improving teaching and learning in higher education. I examine some of the paths I traveled from a simple committee assignment to a major interest and motivation to work and research in faculty development. Reviewing my journey has helped me clarify the research questions I am now asking as well as the methodological issues I am struggling with.

When I became Director of Concordia's Learning Development Office seven years ago I was charged with the responsibility of providing our faculty with whatever services seemed appropriate to assist in improving the quality of teaching and learning. I was mandated to be helpful, to be practical, to be useful. In 1973 there were very few "model" programs to emulate so I was traveling in uncharted territory. I tried to travel two tracks: the "high road looking for theories, models, and so on, and the "low" road, anything that might work.

I Searched for the Theory

My background and training in mathematics had considerable influence on

how I approached this practical task, and even on how I conceive research in this area. My selection and training in mathematics, my major strength, had been based on my ability to do abstract work, to develop complex models and systems of logically coherent propositions and theorems. "Pure" mathematics had undefined terms, postulates, axioms, lemmas and theorems. Application was nice but not necessary! The standard for "truth" was logical consistency and rigour. We even have our own "aesthetics": beautiful proofs, "classical" mathematics, and "modern" mathematics.

Faced with the task of being practical I began, as I would have with any mathematics problem, by searching for relevant theory. What are the basic rules or principles of teaching and learning that I should know and pass on to my colleagues? I was new to this whole area, in fact the area itself was quite new, so I went looking in traditional areas such as education and psychology. With my respect for academia I took a course "Developing, Designing and Evaluating Instructional Systems." Even though I had devoted an enormous amount of time to my subject matter, and even had had a year of teacher training, this course introduced me to a "new" and systematic way of thinking about and evaluating teaching. It gave me a powerful heuristic for designing instruction as well as opened up a whole new literature: Davis, Alexander, and Yelon (1974); Diamond et al. (1975); Gagné and Briggs (1979); Mager (1975).

Some Potholes and Detours

Although this path looked very promising at the beginning, I soon discovered some potholes and detours. These techniques didn't seem to address traditional university teaching - most of which was lecture with some discussion. It didn't talk about the problems or potential of teaching and learning in group settings, which was 99.9% of our classrooms. At an

even more fundamental level, it offered an attractive basic outline for a design process, without offering much support for the basic decisions that had to be made at each point.

Another path down this road in search of truth in theory led to psychology. Glaser (1976) in "Components of a Psychology of Instruction: Towards a Science of Design" went beyond goals, objectives and methods and introduced cognitive psychology and information processing. Now we were really getting somewhere! Powerful theoretical tools were bearing down on the problems of instruction. But alas, they were far too theoretical to be of much practical use in helping me help faculty teach better.

This "high" road in search of theory seemed to be leading nowhere. Education and psychology seemed to offer little help. Instructional psychology was in its infancy and psychology wasn't offering much help either. McKeachie (1976) in a presidential address to APA was not encouraging:

> The progress we have made in learning and educational psychology is not marked by the dramatic breakthroughs in other areas. Rather what we have learned is that learning is more complex than we had earlier believed.

I had been looking for theories of teaching and learning to pass on to my colleagues, whom I had assumed were just waiting out there with baited breath. I was shocked on two accounts. There were no great truths lying around out there; and even when I found some hint of truth, or some reasonably good working hypothesis to offer, the faculty were certainly not very active listeners. Astin, et al. (1974) seemed to reflect my faculty's attitudes towards teaching and teaching improvement "as so straightforward that it required no special training, and yet so complex and idiosyncratic that more training could never meet its extraordinary demands."

Is Teaching a Science?

I had come from mathematics with a particular paradigm, a way of solving problems and asking questions, a standard of truth and a model of science. While I hadn't expected to find "mathematical-like" theories, I had expected to find a strongly "scientific" approach. But what type of science? Even in psychology, where I had hoped to find firm ground, if not solid bedrock, the situation was not only "complex," as McKeachie suggested, but even the basic approach was in question. Cronbach (1975) stated:

> Social scientists generally and psychologists in particular, have modeled their work on physical science, aspiring to amass empirical generalizations, to restructure them into general laws, and to weld scattered laws into coherent theory. That lofty aspiration is far from realization.

My basic approach had been severely shaken. Not only had I not found the theories and principles I was looking for, but there was some serious debate as to whether or not they even existed, not to mention the serious debate over even how to go about finding "truth." Perhaps I had come from mathematics with the wrong paradigm. I was looking for answers that didn't exist. Even psychology itself seemed confused.

I was beginning to wonder if teaching were more an art than a science. Maybe my faculty were right. Kerlinger (1977) in his presidential address to the American Educational Research Association was emphatic: "actual teaching is partly engineering, partly art. It is certainly not a science. There is no such thing as a science of teaching or a science of education." Fortunately for me, and probably also for the faculty I work with, my journey down the "low" road, that search for anything that might work, was more successful. In addition to searching far and wide for truth in theory,

I was desperately seeking practical activities to offer the faculty. My faith in the "semi-hard" social sciences was badly shaken. So I now turned to the "super-soft."

Experience: A Better Teacher

I attended two intensive ten-day residential workshops on faculty development. In the first one Bill Bergquist presented, in an experiential format, a very comprehensive approach to faculty development. Several years later Wally Sikes expanded and reinforced this approach in a workshop I attended at National Training Labs.

These experiences had a significant impact on me. My faith in the "traditional science" approach had left me discouraged, but through these residential workshops I was "born again." I was learning through methods other than lecture. Throughout my entire graduate and undergraduate training I had been exposed to only one teaching technique - lectures - no matter what size the class was. Here I was learning, and learning things that I considered important and significant, but in a very different way. I was learning by experiencing and analyzing my experience. I realized, and really understood in a way much more powerful than any reading could ever have suggested, that there were real alternatives to lectures. There were other methods to use in teaching, and they really worked. There could be more to teaching than telling.

These new methods not only presented alternative ways of teaching, but dramatically altered the criteria I used to measure the success of learning experiences. I set new standards for involvement, for participation and for the types of learnings I expected, in both the cognitive and the affective domains.

These experiences together with many similar ones only served to reinforce for me the major limitation I had felt in my tours through instructional design and development. Those approaches were either unwilling or unable to address the real problems and possibilities of people learning in groups. They were adequate and even quite powerful at the micro-level, i.e. analyzing and designing instruction (unfortunately too often only in print) for a single learner. When it got to the macro-level (large groups of learners) their procedures seemed to produce experiences which, although certainly better than the traditional lecture, didn't utilize the resources and potential of the group for creating significant learning opportunities.

I Needed Skills Too

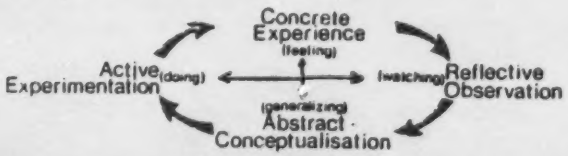
I was stimulated by this new standard for what might be possible in organized group learning experiences, in courses and classes; but I also realized I needed a whole new set of skills I hadn't even considered before. I had been searching for learning theories or teaching theories. But to practice faculty development I needed to improve my skills - my skills to design group experiences, to observe groups, to diagnose, to intervene, etc. I needed to learn more about me and how I worked in groups. And I had to do that before I could ever hope to deliver any significant new messages to the faculty, or even to change my own classes. On my pilgrimage, my search for the "Holy Grail," I had been converted, almost become a "touchie-feelie." I saw new alternatives and potentials for higher education, and all of this was from experiencing it, not reading about it.

My trip down the path toward the "harder" sciences and theory, psychology, educational psychology, etc., had been less than fruitful. My trip down the "low road" had lead me towards practice and several of the "softer sciences," human relations and group dynamics, adult development, organizational change.

But no overriding theory or organization seemed to exist which would help me pull all these disparate pieces together into a theoretical whole or even a working model to help my day-to-day practice.

Looking at My Learning

Through my residential experiences I had learned to examine my own experiences much more carefully. Rather than look outside for theories, I began to reflect on my own experience; in particular I looked at how I learn, how I respond in new situations, how I define knowing itself. The work of David Kolb has been particularly helpful in giving me some important insights and understanding of my own learning. In his theory, he has attempted to describe a model of learning from experience. He would argue all learning is really experiential (Kolb & Fry, 1975).



His model suggests that learning involves a tension between Action and Reflection, between the Concrete and the Abstract. He suggests that productive learning, that is, learning that produces growth and change, involves all four abilities. Everyone uses all four to some degree; but we do have preferences, or preferred ways of responding, to situations. Even though it looks like a circle we don't always have to go around it, nor do we always start in the same place. Since we are making choices on each of the two dimensions we are usually functioning in one of the quadrants. Individuals have preferred quadrants. Disciplines, or specialties within disciplines, require

and reinforce certain kinds of behaviour or activity or quadrants.

My New Perspective

This model helped me in several ways which are relevant to this paper. While I had realized, or at least said I realized, that people as well as disciplines were different, during an intensive workshop with Kolb this point was really brought home to me. Everyone in attendance wanted to know more about Kolb's theory, but there was a real division in the group. Some people were clamoring for more time to consider and explore applications: they defined knowing - "I know it when I can do it, use it, apply it." Another group was clamoring for more theory, how does this relate to other ideas - they defined knowing differently - "I know it when I understand it" - when the ideas are clear and logically related. For perhaps the first time I really appreciated the differences between people. Everyone there was articulate and vocal in saying "I want to know"; but they wanted very different things.

When I say I want to know more about teaching or teaching improvement I probably mean something quite different from many of you who are reading this paper. When faculty say they want to know more about teaching, or more often that there isn't anything to know, what do they mean?

I was becoming much more tolerant of differences. I have a deep concern for teaching, and probably even some skill at it (I really think that is why I have this position in Learning Development). I had originally considered my colleagues who appeared to have less interest or inclination towards teaching to somehow be unenlightened or misdirected. At best they didn't know better, and my truth would set them free; and at worst they didn't care, and student evaluations and the reward system would straighten them out.

I had a greater tolerance for and appreciation of the differences in my colleague's perception of and attitude toward teaching. I had lost a lot of my crusader's zeal. I had not found the truth, but I had learned from examining my own experience. I had more respect for and interest in my colleague's attitudes and perceptions. Perhaps I was only adjusting my expectations and practice to be in line with my potential and promise, but I felt better and even more energetic.

My natural inclination, as well as my training, had been very heavy on the abstract and reflective sides of Kolb. When I was faced with a practical question I naturally went in search of theory. This search had led me down many different roads into new disciplines with very different standards for "proof," explanation, and theory. While each of these areas had strong "ad hoc" potential for particular questions, I needed some overriding model or theory which would help me understand, in Kolb's reflective/abstract sense, my work with faculty, and their response (or lack of it) to teaching improvement efforts.

A Really Good Problem

I was becoming very involved in this activity. What began as the chairmanship of a committee and then the Directorship of an Office was beginning to consume almost all of my time. I had become fascinated and intrigued by this area and was interested in pursuing it more seriously, to "research" it. I had a background and perspective which was different from many of the people working in the area. I felt I had some important questions worth asking and answering. I was in the middle of a career transition.

My own search for a theory which would help me make sense of my work with faculty had indicated a wide range of approaches with no overriding view which could help in my day-to-day practice. It was not only the faculty

developers who seemed to lack "theories" of teaching improvement. Individual faculty member's theories of teaching, or models to inspire their practice, seemed in an even sorrier state. Freedman (1979) reporting on extensive interviews with faculty stated:

> Very few faculty members can define the basis on which they evaluate themselves or can offer any rationale for what they do in the classroom. It is apparent that most of them carry on in the way they learned as students. Not only does traditional academic culture ignore basic education issues, it does not even possess the concepts necessary to address them. With no concepts for describing student development, without means to evaluate one's teaching, without even a perspective from which the student may be seen as a person, the professor is denied the most elementary satisfaction of professional activity - seeing desirable things happen as a result of planned action.

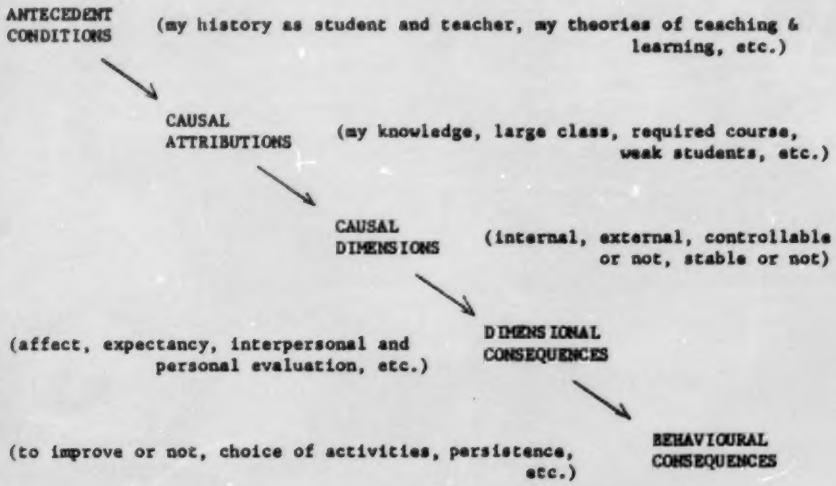
The major question or central theme underlying my intellectual work, as well as my daily practice, is to increase my understanding of how professors and faculty developers think about teaching and teaching improvement. For example, why do so few faculty members, rarely more than 20%, respond to the best improvement programs we can plan and offer?

I was depressed by the overwhelming number of models, approaches, and perspectives. I was looking for a theoretical framework which would help me make sense out of all these various theories (integrate them in some way) as well as give me leverage on understanding my work with individuals. Young (1979) suggested a model of faculty behavior, learning and development which might help organize theory and research for faculty development. I would like to suggest another which I have been working on.

A Lovable Theory at Last

With a lead from Wittrock and Lumsdaine (1977) I found attribution theory, Weiner (1976, 1979, 1980). As one who cherishes and craves theory this seemed like a truly "lovable theory." It was certainly rich, incorporating

thinking and feeling, motivation and behaviour, and it left room to include a whole host of "antecedent conditions".


ANTECEDENT CONDITIONS
(my history as student and teacher, my theories of teaching & learning, etc.)
CAUSAL ATTRIBUTIONS
(my knowledge, large class, required course, weak students, etc.)
CAUSAL DIMENSIONS
(internal, external, controllable or not, stable or not)
DIMENSIONAL CONSEQUENCES
(affect, expectancy, interpersonal and personal evaluation, etc.)
BEHAVIOURAL CONSEQUENCES
(to improve or not, choice of activities, persistence, etc.)

Although it wasn't written about teaching and learning, I could easily make the translation. Basically it suggested that, as a result of my past history both as a student and a teacher, any implicit or explicit theories of teaching or learning I might hold, and specific cues from a particular class, I would judge that class to be successful or not; and then I would make (again perhaps not explicitly) attributions as to the causes of that outcome. Underlying those attributions are at least three dimensions: locus (internal or external), control (controllable or uncontrollable), and stability (stable or unstable). These dimensions have consequences in the area of affect, expectancy, interpersonal and personal evaluation, which in turn affect my behaviour.

19

I don't want to discuss the model in any more detail here, but I want to highlight several important points about attribution as a theory.

First, it is broad enough to incorporate different theories of teaching and learning. It allows room for personal perceptions, and idiosyncratic values, beliefs or assumptions. It attempts to explain behaviour in terms of an individual's own perceptions of the situation and his "theories in use" (Argyris & Schon, 1974).

It is a theory of behaviour which incorporates feeling, thinking and motivation. It is in a language simple enough to be the basis of communication with faculty.

It can be applied at many levels: students' attributions about their learning, professors' attributions about their teaching, professors' attributions about their careers, instruction/faculty developers' attributions about faculty or teaching.

What had begun as a search for some specific theory to help teachers improve teaching or at least to help me help teachers improve teaching has resulted in my finding a broad theory which is rich enough to help me understand, or at least ask more intelligent questions, about my work with faculty. I had not originally conceived of my faculty development job as an "intellectual" activity. I had seen myself more as a clearing house of information, a dispenser of "truths" about teaching. As I got more into the job I became both confused and intrigued. Making sense for myself, (which no doubt will help my practice) and contributing to a better understanding of, or even a "solution to this problem" appealed to me inherently. Mathematicians love problems!

Even to call it a problem may only reflect the view of the faculty developer who has too few clients or "converts." I have been impressed that many intelligent and thoughtful faculty have often ignored, and even sometimes actively scorned, our best efforts to evaluate and improve university

20

teaching and learning. If it is a problem it may be ours, not theirs.

Does the Model Fit the Facts?

I had my model or theory which helped me make sense out of what I was experiencing. It suggested reasonable hypotheses to explain faculty members' reactions to evaluation of teaching and teaching improvement efforts. Just having the model would have been enough for the mathematician side of me. But if I wanted to test the fit of my model to the facts I was going to have to do a whole lot more work. People in this "new" area seemed to demand more than "good logic and plausible hypotheses."

Here again I was on new ground. I was out of my element in research methodology in this area. My first inclination would have been to develop some tidy questionnaire and then "number crunch" the results to find some generalizable results. I have not followed that path because I don't feel our knowledge in this area, our appreciation of all the subtleties and fine points, is sophisticated enough to make this technique fruitful.

I have been gradually finding support (among the "experts") for what I intuitively sensed was a better way to go. Cronbach (1975) suggested "instead of making generalization the ruling consideration in our research, we reverse our priorities." As we go from situation to situation, our

> first task is to describe and interpret the effect anew in each locale, perhaps taking into account factors unique to that locale or series of events. As results accumulate, a person who seeks understanding will do his best to trace how the uncontrolled factors could have caused local departures from the modal effect. That is, generalization comes late, and the exception is taken as seriously as the rule.

I believed we needed to study individual cases in much greater depth but I was still concerned about generalizations, the old security blanket from my mathematician days. Stake (1978) helped me along when he explained that

disadvantages of case studies disappear "when the aims are understanding, extensions of experience and increase in conviction in that which is known." He goes on to say:

> What becomes useful understanding is a full and thorough knowledge of the particular, recognizing it also in new and foreign contexts. That knowledge is a form of generalization too, not scientific induction, but naturalistic generalization, arrived at by recognizing the similarities of objects and issues in and out of context and by sensing the natural covariations of happenings. To generalize this way is to be both intuitive and empirical.

So I could have my understanding and maybe even my generalizations too. In my job whose prime purpose was to be practical, but with a depth of understanding, I would have to reconsider general laws. Stake wrote:

> It is the legitimate aim of many scholarly studies to discover or validate laws. But the aim of the practical arts is to get things done. The better generalizations often are those more parochial, those more personal. In fields such as education and social work, where few laws have been validated and where inquiry can be directed toward gathering information that has use other than for the cultivation of laws, a persistent attention to laws is pedantic.

I am now off on an intensive study of faculty and their views of teaching and teaching improvement. I use in-depth interviews with faculty, some lasting up to three hours. This method produces incredibly rich data which is often complex, confusing, sometimes contradictory, and almost exhausting to analyze.

I am still troubled by the nature of self-report data and am following with interest the debate in the psychological journals (Nisbett & Wilson, 1977; Ericsson & Simon, 1980). My pilgrimage in search of truth always seems to lead me to more and more complex questions. Just another good problem for an old mathematician!

My Research and Practice Married

What I have described as two separate roads are now closely intertwined. My interviews with faculty not only help my developing research interests but also serve as powerful intervention on our campus. Part of my responsibility is to increase faculty concern for the quality of teaching and learning at Concordia. My interviews encourage and stimulate faculty to think about their teaching practice while at the same time provide research data.

I don't think my faculty colleagues consider themselves research subjects at all. I am investigating a complex phenomenon, asking interesting questions, and I want and need their help.

I have rarely found faculty who are not eager to talk about the nature of their work. In fact, they seem flattered to have been asked, to be respected for their perceptions, insights and knowledge. We have interesting conversations which are rewarding in and of themselves.

One of my major problems is time. Not so surprisingly, that is the problem most often mentioned by faculty. Fortunately, my area of research closely overlaps or intersects with my daily work; and in that way I am able to think about my work when I am researching, do research when I am meeting with faculty and running workshops, and go to professional meetings like POD to talk about my work and my research at the same time.

My journey from full-time mathematics to faculty development has led me to visit many different areas, changed the nature of the "truth" I was seeking and even the very methods I was using. Even if I never complete this career transition or never finish my journey in search of "purifying faculty development" I must admit that getting here has profoundly changed my conception of teaching and learning, improved my own classes dramatically, and been both stimulating and enjoyable.

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TANNING MY HIDE WITH RESEARCH

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My intellectual work has important consequences for me and for those with whom I ply my trade of faculty development. The time seems right to stop and discern those consequences, not because I have great wisdom to share but because such an exercise provides a glimpse of one mortal trying to integrate intellectual work into day-to-day professional life.

The title of this paper suggests a double metaphor and a theme which emerges when I think about my intellectual work. I recently returned to the Upper Midwest of my upbringing, and the ways and the words of a strict and agrarian people. The "tanning of hides" in this experience means two quite different, yet salient, things. First, it means the turning of a raw product into a functional and even elegant material. A cowhide is not useless in its untanned form, but with refinement its uses multiply and its value increases. It has worked the same way for me as a faculty developer. The values, knowledge, and skills I bring to my work have use, just like that cowhide. But my intellectual activities -- my research and my writing -- give a suppleness and attractiveness which I believe enhances my value. I may not be like fine leather, but I can now cover deeper contours on the body Academe. I find I'm more resilient in the bad weather that is sometimes our work, and I certainly must smell better to some colleagues than if I did not have some sort of intellectual work underway.

The other meaning of my title suggests a second reality in my intellectual work, although it raises less positive memories of my childhood. When I disobeyed my mother or father or when I got into some unforgivable mischief, my

father would "tan my hide." That is the way he would put it. As a psychologist I eventually came to call this an aversive stimulus, but then it was simply a sore fanny and usually a lot of tears. Well, research and writing have had these consequences also, and I describe some of the negative effects in greater detail below. My intellectual work -- and the ways I have gone about it as a faculty developer -- have caused me and others embarrassment, worked against other development activities, and even caused me physical pain and tears of sadness.

Now let me be more specific by commenting on topics common to all authors of these papers.

Some Central Intellectual Issues

One overarching issue has predominated: the thinking and behavior of college teachers, as these wholly human activities affect what one does in teaching. I am interested in students, methods, materials, teacher-student interaction, and institutions as they influence the teacher and as the teacher influences them.

How did I arrive at this focus for my research and writing? First, I should say that I have not been at it very long; the sharpening and elaborating process has not had much of a chance to do its good. But I can identify an intellectual legacy and sketch a pathway to my present interests and perspectives.

My academic preparation accounts for much of my view of the world. And most important in that preparation as an educational psychologist, I believe, was the luck of growing up intellectually and professionally in a milieu of varied and often competing theoretical positions and empirical interests. I am speaking of my academic department, one small wing of a building where offices all face out into a room that became a melting pot of academic and

personal interactions. Don't get me wrong; some of these people never spoke to each other, but their ideas found ways of seeping under even the most tightly closed doors. And for those of us who spent much of our lives in that room, the effect was undeniable.

My advisor was a behaviorist, but a very special kind, one who allowed that other things besides contingencies of reinforcement affect behavior. Next door to him was a person committed to the idea that social structures -- classrooms, schools, educational systems -- have a predominant effect on thought and behavior. Then on the other side of the entryway camped a leading humanistic writer! He was a true believer in the importance of emotion and self-esteem for learning and teaching. Finally, dead across the room, over a couple of secretaries' desks and behind a four-drawer file cabinet, was the office of the smartest person I will ever know. He, in addition to providing a daily dose of awe, gave us an up-to-the-minute, play-by-play account of the cognitive movement in the social sciences, psychology, and education.

I have gone on at some length about these people and their setting, but I do not think I overstate this influence on my intellectual work, and, in particular, the issues I find most important. My education in this way provided the foundation for what would happen in my intellectual outlook.

Near the end of my graduate training I was confronted with an idea which has very much taken hold of me and my intellectual work. That idea goes something like this: to understand human behavior, you have to use all the perspectives I had learned about on the third floor of Erickson Hall -- and more. You have to integrate them into your soul, as well as into your experiments, if you are to have an understanding that would be worthwhile. Even more strongly stated -- and this phrase buzzes in my head -- to truly understand something like the thinking or behaving of a human being you have to look at everything

and all at once. The behaviorist, cognitivist, humanist, or the other "ists" look at only part of what is going on and look only at certain times. The point is that all are necessary but none is sufficient. I had to find a way to use each, at the same time, in my work. Or so it seemed.

At just about that time another propitious thing happened. The emphasis among educational psychologists -- at least the AERA variety -- swung significantly away from research on learning and toward research on <u>teaching</u> and <u>teachers</u>. Two pieces of this movement added to my intellectual journey. First, the National Institute of Education conducted a National Conference on Studies in Teaching, which consisted of a number of study panels intended to identify the domain of issues in the study of teaching. The composition of the panels acknowledged right off that this research held a variety of different perspectives, theories, and methods; separate panels dealt with Teaching as Human Interaction, Teaching as Behavior Analysis, Teaching as Skilled Performance, Teaching as a Linguistic Process in a Cultural Setting, Teaching as Clinical Information Processing. This reinforced my graduate school experience. But now I was looking for linkages, a way of using different perspectives simultaneously and as luck would have it again, I found just such a way. In the work of one of the panels, the last one (National Conference on Studies in Teaching, 1975), a model popped out that gave me a crude way of thinking about teaching and the thought and behavior of teachers in a somewhat complete and unified fashion -- a fashion which the activity under study deserved.

The chairperson of the panel would eventually go on and found an institute for the study of teaching based largely on this way of viewing teaching. And my following of the institute's activities would become an important impetus to my intellectual work. It probably did not hurt, also, that this person was that very same professor behind the four-drawer filing cabinet.

Just one final event needs to be mentioned for the yellow brick road to my intellectual interests in faculty development to become complete (at least until the new four-lane section to North Dakota is begun). With a degree, an idea, a model -- and a new suit of clothes -- I took off to my place in Academe. But as soon as I arrived I found I could no longer just learn myself, I had to help others do the same. Specifically, I had to teach people about human thinking and behavior (in educational psychology courses). Courses like that cover a vast array of material, from theories of human development to pointers for classroom tests. The task of pulling together that material in a way that students might find meaningful quite frankly stumped me. But once more I looked out. I chose a textbook, authored by an eminent educational psychologist (Cronbach, 1977), in which he picked up on that same idea I had found a year or so before: thinking and behavior must be considered in an integrated way. He even presented a model which depicted learning in a way analogous to the new way of viewing teaching behavior. Now I was excited; in fact I was so inspired that I adapted a model of my own, and I built my courses around it.

And, as it would turn out, my research and writing about college teachers in turn has found this way of thinking about human thought and behavior at its core. It only required one more twist, which came, like the others, unexpectedly. I asked my students on a final exam to use my model to explain one episode of learning. I expected that each class member would choose a student whose learning they had observed. All did just that but one student. She used my model to illustrate her own thinking and behavior as a teacher. I was astounded, first by the independence of this student, but then by the substance of her paper. I had a model of my own to pursue the thing about which I was most interested -- teaching and teachers. And, in this model I had a way of thinking about learning and teaching that was continuous. These things

had occurred to me before, but my student's act jarred me past my reservations. Also, I now had someone -- she was a graduate student -- to talk with about my interests and the approach that had come, by the route I've just described, to make so much sense to me.

Some Specific Research Questions

It should be remembered that at the time my intellectual work began in some earnest I was already working full time in faculty development, particularly in trying to help people provide effective instruction. And I was taking a particular approach to that task, an approach which I called "course planning." In this approach I was influenced by the paradigms of instructional psychology and instructional technology, i.e., the importance of specifying objectives, methods, and testing in some sequential and systematic way. The approach worked pretty good; most people seemed happy, and courses and even student achievement began to change for the better.

But then I started paying attention to some of the "noise" in my system. For example, not everyone produced the same type of objectives, some people ignored advice about proper strategies, other instructors had a hard time seeing a relationship between testing and instructional intent. Also, I began to notice some challenges to the very assumptions and theories behind the approach. It was one of these challenges in particular, by a professor of English, that pushed me along in my intellectual work. I decided right then that I wanted to do some research and writing. I decided I wanted to ask "What affects faculty members' thinking and behavior in the context of their teaching? Why do they do what they do?" The questions were quite general, but they were a place to start. And they motivated so much because they had grown out of my faculty development work, and I saw prospects that answers would pay off for me in that work.

I had had some background for the intellectual work I wanted to pursue. At the point of my doctoral dissertation, I was beginning to get involved in the faculty/instructional development business, and I was concerned about the motivation of faculty members to get involved in instructional improvement activities (so were a lot of other people at that time). I asked "What factors would contribute to a university faculty member's decision to participate in instructional improvement activities?" And I did a study which was broadly based in its intellectual outlook; it reflected some of the influence I described above. But it lacked an overriding concept of human behavior and thought to guide it.

So with the intellectual seasoning I have described, and the day-to-day experience to build from and to look forward to enhancing with my research, I set off. First I wanted to do a review of the field, to update and improve the thinking I did in my thesis. It was at that point that I first used in my study of teaching the model of human thinking and behavior which I had developed for myself. I used it to organize the existing theory and research which related to my questions of faculty thought and behavior in teaching, and to identify areas and more specific questions for empirical research. The result was a paper titled "What Do We Know About Faculty?" published in the POD Quarterly (Young, 1979).

At about the same time, I began to be impressed by the issue of context in human thinking and behavior. There was underway a general movement in social science emphasizing the influence of the situation in which phenomena, such as language, took place. Anthropologists led the way, with cognitive psychologists right behind. A paper titled "The Psychology of School Subjects" (Shulman, 1974) influenced me greatly. It occurred to me that maybe I should focus my look at teachers' thinking and behavior in a particular context, such as one discipline.

Two of the people who had challenged me the most, as I made my decision to do some research, were teachers of English composition. So after some discussion, which I'll describe below, I decided to focus on one subject taught at one level: the teaching of freshman-level writing. Thus my research questions were shaped further.

This decision, in addition to narrowing the focus of the research, had another consequence. It created a collaborative project. The intellectual work, at least around the questions about the teaching of freshman composition, no longer was just mine. Now two professors of English, an educational researcher committed to a contextual approach, a cognitive anthropologist, and my graduate student all coalesced around the project. And, this in turn further influenced the nature of the questions we would pursue.

As the leader, my interest in thinking and behaving in the context of teaching served as a focal point. But two things happened. First, members of this new research group had their own special interests. For example, one English professor was primarily concerned with the question "How do you change the thinking and behavior of composition teachers?" She wanted an immediate and direct application to faculty development. The anthropologist, on the other hand, was most interested in classroom interaction and the effect on students.

The other thing that was at work to shape our research questions was a desire to move quickly toward empirical work. Each of us, but the four professors particularly, felt some pressure to turn this interest and activity into some publishable results. So without much discussion we moved ahead at my suggestion to do a study which focused on a certain aspect of teacher thinking: The conceptions which teachers of composition hold about what they do in their teaching.

Research Methods

Echnographic methods have loosely guided this investigation of teachers' conceptions of composition. (I will limit myself to talking about just that study in the rest of this paper.) I began with a methodological premise, or I should say one evolved as I conceptualized the research I wanted to undertake and began to interact with my collaborators. The premise suggested that looking more deeply into a few cases is more productive than studying many cases superficially. Due to many of the influences already described I have come to believe that to understand something very well, like college teaching or college teachers, you must study it in all its complexity. The only way to identify all relevant variables and observe their interrelationships is to study a few cases over a long period of time, in depth, and from a number of different perspectives. The emphasis should be on validity, not reliability, at least in the stage we find ourselves in the study of college teachers. So the procedures that would govern our research into teachers' thought and behavior, and particularly teachers' conceptions, would first gather insights from a few cases and then test them with progressively larger and more diverse samples.

In addition to this premise, three other things influenced our choice of methodology. First, research on composition was becoming more quantitative in its orientation. So we thought more qualitative methods would help us achieve some distinctiveness in this field of research. Also we believed, quite nobly, that we might be able to check what our English professors saw as an over-quantification of the inquiry into composition.

Secondly, qualitative methods fit the epistemological values and training of the group better than did more experimental methods. My own background, in addition to educational psychology, rested in philosophy and sociology.

And as I have mentioned, both the educational research professor and the anthropologist were committed to qualitative and descriptive methods. And the English professors, with training in literary criticism, found interviewing, observing, content analysis, and other more qualitative approaches more to their liking.

Finally, we figured out quite early that these methods would allow us a "two birds with one stone" approach in our research. I, and one of the English professors, had a hope that we could find a way to do research that had direct faculty development payoffs. Interviewing and observing, we surmised, might fulfill that hope. And, as I will describe below, we were very right.

So in our first study, interviewing became our primary data-gathering tool and the logical analysis of interview content became our way of determining results. Both the methods we used and the results of this first study are reported in "Teachers' Conceptions of Composition," a paper yet unpublished.

Negotiating with Participants

Once I decided to study composition, I knew I had to touch base with those people who had some stake in a study of composition at my institution: the Dean of Arts & Sciences, the English Chairman, the Director of Composition, and certain senior faculty members in the English Department. They would make it possible or not for subjects to work with me. They could simply prevent me from doing the interviews we had planned, or they could make it difficult for those who would cooperate. Since the two English-professor members of my research team were junior members of their department, their realistic participation depended on the good will of the department toward the project. I did the base-touching, and found that the teaching of composition was a sensitive subject. All agreed to the project, though under the condition that I check regularly with the composition director.

This research, and our approach, became touchy for another reason. We were in effect moving in on the department's research territory. Although not much was going on in research in this area, the composition director in particular felt this was an area of his expertise and interest. That made it difficult at times for me as an outsider and for his junior colleagues whose work on this project threatened to surpass his own.

My strategy was two-fold. First, I asked respected senior members of the department to be the subjects of the study, including the composition director. Secondly, I joined the department's composition committee and provided them assistance in a variety of projects over two years. This act was crucial in my opinion; it demonstrated a more than superficial interest in the teaching of composition and a longer and broader commitment than just one study.

Rewards to participants were equally complicated. As repayment, I offered my subjects a workable arrangement for the interviews and feedback not only at the end but after each interview. I also offered, only half-facetiously, to make them famous through the publication of interview material. Each of these had incentive value for the various subjects; together they garnered sufficient motivation to start and continue the study. In fact (and we know a reinforcer is something that in fact reinforces) the sessions were stimulating both to subjects and interviewer, feedback was judged useful, and fame was felt in a tiny way by the person to whom we referred in our papers at three national conferences as Professor G.

In summary, I could say that the strategies that paid off most were developing good personal relationships and showing involvement of the researchers in the daily concerns of the subjects, in this case the teaching of freshman composition.

Two failures in providing reward should be mentioned. First, we gave insufficient feedback. Here we did not deliver all that we had promised; a grave error in any endeavor. The press of other activities (the bane of doing satisfactory intellectual work while in a professional position) caused us not to analyze the interview and give feedback to all our participants. We shared with them bits and pieces and all of our papers. But the assistance that we had promised -- and our opportunity to use this research as faculty development in itself -- fell short. Second, there were negative payoffs in the visibility of our participants among their departments' colleagues. Visibility outside of the English Department worked well. Our interviewees were pleased for us to use them (appropriately pseudonymed) as examples at national meetings and in my own work on campus with faculty members from other departments. But within the department our papers and a colloquia built around our data and analyses provided too much exposure, given a certain competitiveness and contentiousness among the members.

Standards of Quality

I am afraid always that my standards are not very high, or at least that they are overly pragmatic. I am concerned about reliability and validity of data, soundness of deductions and inferences, and clarity of results. On the first two issues I do not always measure up the way I want. Here is where time and expertise for intellectual work pay off. On the last issue, I do much better. Let me say a few words about all these issues.

Two biases allow me to live with compromise. First, I believe that all data are useful, if only for their value in giving us "hunches" about the nature of the phenomenon we happen to be studying. I feel that our present knowledge of teachers is limited, so even limited data and analysis can be useful if cautiously and judiciously used. Second, I believe that practitioners,

who are usually not highly trained in research, have something important to contribute. So, the research of practitioners, despite technical limitations, should have a value and a place in any realm of inquiry.

On the clarity of results and the use of results, I have less justification for compromise. This aspect of intellectual work is the most important for someone involved in faculty development. We are in the business of stimulating change, and the results of our intellectual work can be among our most important tools in that business. So not only must papers be well written, but also their placement, presentation, and use must be carefully planned. Also, other ways of reporting results need to be used. In our composition project, we have produced three papers, organized several colloquia, peddled results informally, and used data and analysis in consultations with participants.

A final standards issue has to do directly with publication. As I have mentioned, our work has been presented at a variety of national meetings, but it has not yet found its way into publication. Frankly by standards of most journals, it is not ready, and time is limited to do additional research, analysis, and writing to get it into that form. We have been satisfied to a point with our audience and impacts, especially on our own campus. But we all feel the need to have more influence and to get into print.

Wider Influence

I try to build that influence into the design and overall strategy of my research. I try not to set my target for influence too broadly. And, I try to involve other researchers and practitioners as early as possible in the intellectual work which I have underway. Because context seems so important and because ownership has a lot to do with eventual acceptance, I set my sights on influencing smaller rather than larger groups. In the case of our composition research we hoped first to influence the subjects of our interviews, then

others who taught composition in their department, and only in some more general way audiences beyond our institution. We did present papers at national conferences, and we did hope to influence practitioners and researchers at these meetings but our expectations were not very high.

The collaborative approach we used also had an effect on our group members, in terms of their own intellectual outlooks, their interests in research, and their morale as researchers -- and, in the case of our English professors, as teachers of composition.

Getting Everything Done

I should say right off that I do not do a very good job of getting everything done. A good example is the most immediate one: this paper. I prepared the first draft well past my deadline and only in the cracks of my day of administering an instructional development program.

This situation poses a real dilemma, one that is felt deeply and more and more constantly. I need to do intellectual work, in fact I have three needs. First, active inquiry provides me with information important to me in my job. Second, research and writing play an essential part in my career goals. And finally, I find that I am not either intellectually or personally satisfied unless I have some intellectual work going on -- even minimally at all times. But alas, there simply is not enough time to do it as well as I would like to do it.

My satisfaction rests, though, with the sense that the intellectual work I do complete has an effect on my practice and that my practice has an effect on my intellectual work. And that is what I'm really interested in doing: keeping myself a whole and well-integrated person, my hide well tanned. As a professional educator, a faculty developer to be specific, I must be both a person of action and a person of reflection.

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ON DOING INTELLECTUAL WORK:
GRASPING THE POWER OF THE GESTALT

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All of us do intellectual work as part of the common process of making sense of our experience. We set forth ideas, attempt to verify and extend them, and experiment with alternative conceptualizations. Inevitably we create a frame of reference which provides a context for what we say and which gives grounds for judging its validity. It is this process of context setting that seems most crucial to me, given my approach to intellectual work and to joining the worlds of contemplation and action.

I am a professor, not a faculty developer. Yet I am inescapably a faculty developer because the crux of my profession is fostering beneficial changes in others -- in managers, in situations, and in students. I have focused my recent work on adult development, and on the potential for creating transformative organizational environments. This frame of reference has become my context for interpreting events; for example, when I evaluate a college's responsiveness to adult students or a company's responsibility for the career development of its employees. My work is synthetic and theoretical, yet also immediately practical because an understanding of developmental processes guides my day-to-day decisions.

Overall, I've come to envision my central task as that of enabling myself and others to grasp the power of a transformative gestalt, a way of "seeing" a situation differently and more adequately. The correlary task is to act more effectively from that changed perspective. Thus, my role as a scholar is no different from my roles as teacher or organizational consultant. The heart of the task lies in working with my own and others' processes of experiencing and of fostering qualitative shifts in how sense is made of that experience.

A Transformative Gestalt

It's not surprising, as I reflect on it, that transformation is my central issue and that I am searching intuitively for patterns to explain my own and others' experience. I am a divergent thinker whose strengths are the ability to see multiple perspectives, to grasp issues imaginatively and intuitively, to embrace emotion and concretences, and to stand back and look again, hopefully "seeing" more than others see. In my fondest fantasies I envision myself as an artist or magician seizing the power of an inward perceptual thread to transform outer reality. I am drawn to theories of transformation. I am fascinated with learning methodologies that purport to change people's perspectives. I have experienced perspective shifts, the embracing of developmental tasks, and the powerful impact of group processes

and personal learning methodologies. I have found relationships and environments that fostered my own development and those that hindered it. I choose to spend my time and energy in activities that create the potential for "significant learning", to use Carl Rogers's phrase, in myself and society. That is the core of my intellectual work. In sum, that is my work.

If my major interest is in developmental transformation, correlary interests are promoting perceptual complexity and cultivating the skill of moving from complex perceptions to actions informed by that complexity. I think of this as developmental complexity because greater awareness, differentiated and reintegrated at higher levels, characterizes stage theories of adult development (Bartunek, Gordon, & Weathersby, 1980a; Kohlberg & Mayer, 1972; Loevinger & Redmore, 1970; Loevinger, 1976) and also characterizes applications of gestalt psychology to individual and organizational change (Polster & Polster, 1973). I have tended to focus on the possibility of personal change in institutional contexts. But, I am after the gestalt here, and in the foreground is developmental transformation, a qualitative shift in perspective, supported by cultivating and articulating the experiencing process. That "experiencing process" can belong to an individual, a group, or an institution. The pressing questions for me, at this moment, lie in identifying the stages, patterns, structures and pathways of growth that enable us to cope with change and to transform our environments. For example, what are the characteristics of organizational environments that support self-actualization for individuals? How can we enable individuals and institutions to become who they best are in a complex and constantly changing world?

What Led Me to These Questions

These questions are the result of a career spanning fifteen years and twelve institutions. I have moved from educational research and development, to program administration at the federal level, to group training and counseling, to consultant work with academic institutions around issues of adult learning and professional education, to college teaching and my present position in the organizational behavior group at the University of New Hampshire. My career continues to require constant changes of perspective.

The forces shaping my work are both intrinsic and extrinsic. Extrinsically, there are interesting job opportunities and worthwhile institutional concerns. For example, developing materials for teacher training nationwide that had a demonstrated effect on teachers' classroom behavior (at the Far West Laboratory for Educational Research and Development in San Francisco); institutionalizing competency-based standards for training and assessment of child care professionals (at the Office of Child Development /DHEW in Washington, D.C.) which, in effect, created a new professional role; facilitating academic planning for a newly-established graduate school of psychology dedicated to creating new options and roles for mental health professionals (at the Massachusetts School for Professional Psychology); or consulting with a national network of higher education institutions about adult development

and program design (sponsored by the Fund for the Improvement for Postsecondary Education). Whatever the context and immediate task, however, the core of the work that invariably excites me is implementing a new vision. Invariably, I am involved with efforts to change people and institutions. Usually, I am seeking ways to articulate and implement changes of perspective. The components of the change are definitions of purpose, tasks and roles, and enlarged perceptions of what is worth noticing and responding to in a situation.

Research as Perspective Transformation

Research for me involves enlarging a process of personal search and also searching for a transformational idea or context. Let me give several examples.

At Wheelock College in Boston, I had the opportunity to compare adults' abilities to perceive themselves as self-directed learners with their skill in responding to individual differences and the developmental needs of young children. The adults were enrolled in an innovative competency-based child care staff training program. The opportunity and interest grew out of my experience inaugurating the program from the federal level. The research was shaped by my conviction that adults could best respond to developmental differences in young children if they could perceive themselves developmentally and could articulate their own processes of learning.

Formulating the research in this way was an important shift in perspective. At that time I was vitally concerned with self-

directed learning in my own life. What I did in this study was shaped by real interest, by asking myself what I really wanted to know for myself that might have profound implications also for others. The results confirmed my conviction and had some immediate implications for the design and eventual effectiveness of the program. However, the power here is in the gestalt -- the idea itself: the necessity for adults to have complex and differentiated perceptions of themselves and their learning processes if they are to create any fundamental changes in institutions. Another study of the same program, this one from an institutional and policy perspective (Weathersby, 1974) focused on the idea of this new professional role and the possibility of institutionalizing it.

A study more relevant to faculty development efforts is my study of students in the Adult Degree Program of Goddard College. In a previous review of the literature (Weathersby, 1976), I had created a conceptual framework that articulated three dimensions of development for adult learners. In this study (Weathersby, 1977), I placed individuals in the three developmental sequences of that framework - life cycle stages, structural developmental stages, and learning style. I then investigated how each dimension of development shaped a student's perceptions of the program, reasons for attending, and awareness of using education to support a life transition or personal growth.

The intrinsic reasons for the study were compelling. I was fascinated by life span psychology applied to adults: by the work of Daniel Levinson (1978), Roger Gould (1978), and George Vaillant

(1977) in tracing successive issues and developmental tasks of the life cycle, by Jane Loevinger's (Loevinger & Redmore, 1970; Loevinger, 1976) description of stages of ego development, and by William Perry's (1970; 1981) scheme tracing students' responses to a college environment in their intellectual progress from dualism to multiciplicity and relative thinking. I knew that graduate study had changed my own inner life, and I understood it in the context of these developmental theories. I wanted to articulate this process for others. Extrinsically, no one had this kind of data on adult students. And, more importantly, I had a collaborator in Jill Mattuck Tarule, at that time a faculty member in the program. She used some of the same data in conjunction with clinical interviews to outline steps in a process of inner transformation that enabled movement within and across the stages (Tarule, 1980).

The results of my study showed clearly the effect of an individual's place in these developmental sequences in determining what is learned, how, and what meaning is assigned to it. Subsequent articles have elaborated these results, suggesting implications for higher education (Weathersby 1980, 1981; Weathersby & Tarule, 1980). What I personally value about this work is the context from which my research questions arose -- the assumption, now validated, that an individual's capacity for transformational learning is shaped by the developmental sequences of adulthood; and that an educational institution can play a facilitative role in what I would call life transitions and developmental change.

My work in adult development led to a three-year consultancy with a national network of adult projects funded by the Fund for the Improvement of Postsecondary Education. Here the emphasis was on refining the dialogue among informed practitioners and articulating useful constructs to connect research and theory about adults with program design. This was a multi-institutional network, with individuals joining and leaving at various points. The network created a base for mutual support and professional renewal. We convened twice-yearly working conferences at which we discussed baseline data on students in each program, taught each other our diverse research perspectives, discussed case studies of individual students, and articulated our assumptions about designing programs for adults. We wrote individually and collaboratively in several formats (Bartunek, Gordon, & Weathersby, 1979; Greenberg, Bergquist, & O'Donnell, 1980; Tarule & Weathersby, 1979) and also convened a national conference on adult development and program design to share the results of our efforts. FIPSE offered this opportunity in the form of funding and organizational focus for the dialogue. The network maintained itself through collaborative working relationships that allowed each individual and program its uniqueness in contributing to the common effort. Again, in this work I value the context: collaborative learning created the basis for institutional improvement.

Recently, I began a study of women business owners in New Hampshire. I started with baseline data: How many are there? What kinds of businesses? What obstacles do they face? What kinds

of learning accompany the role? I began the study in response to the creation of a Small Business Development Program within the University System, and the fact that I had been appointed to a faculty committee overseeing the effort. The program provided me with a small grant and released time from teaching. The Whittemore School has provided the services of several graduate research assistants. These are incentives but the idea that excites me, and my purpose for the study, is creating visibility for women in business: documenting their presence, articulating their experience, and creating an awareness of their educational needs. The study is a small intervention intended to raise the consciousness of individuals and agencies throughout the state. One result is a Directory of Women-Owned Businesses in New Hampshire (Bartunek, Gordon, & Weathersby, 1980b). The directory gives woman business owners access to each other for networking and mutual support, and others access to them. Again, the process of articulating someone's experience more complexly, and creating the possibility that they and others will change their attitudes or be moved to action, is what satisfies me.

These same concerns lead to intellectual work in conjunction with my teaching. I seek to "teach developmentally", which means designing instruction to "pull" developmental change. Currently, my students are MBAs in a course on human behavior in organizations and graduating seniors and experienced working women in a seminar on women in management. I want them to perceive their current and future work situations more complexly, and to be able to consciously

shape their actions in line with their highest goals and developmental values. I want them to be able to adapt to organizational situations as they are, and to transform them, using their own processes of search as the basis for action.

Gathering and Analyzing Data

Given my goals, research is not a detached process. It is a collaborative process, involving others in elaborating, confirming and disconfirming interpretations. In formal studies I tend to use a mix of research procedures: standardized tests with scoring systems that have reliability and validity (e.g., Loevinger's Sentence Completion Test for ego development or Kolb's Learning Style Inventory) and my own questionnaires with some factual items that can be quantified and some short open-ended questions that have to be content-analyzed. However, I'm not satisfied until these are supplemented by face-to-face interviews and participant observation. Studying Goddard's Adult Degree Program, for example, I lived in the student dormitory through two group residencies and talked nonstop with anyone who would talk to me (and there was always someone) through breakfast, lunch, dinner, and parties. Similarly, I will not feel satisfied that I understand the situation of women business owners until I add to my initial survey data some individual or group interviews.

The point at issue here is what constitutes data, and how one arrives at the context for interpreting it. Because much of my work involves context setting, data gathering and analysis is not necessarily the central concern. For example, in creating a conceptual framework for

synthesizing dimensions of adult development my concerns were identifying central ideas about stages, sequences, levels and developmental change in research from a variety of disciplinary traditions and stating their commonalities while respecting their differences. The result was a broader, more elaborated concept of development and, thus, framework for application. What is of concern to me in much of my work is the validity of the synthesis as a context for action.

Relevance and Cooperation

Trust is import in the relevance of research to people's lives. Eliciting cooperation has not been a problem because I ask about people's experience and learning process, their assumptions in doing what they are doing, and their use of institutions for their own purposes. Establishing trust is a prerequisite which I usually deal with by saying clearly what it is I want to know, and asking for help in learning about it. I generally ask questions that people like to answer and need to answer for themselves. The experience of completing a questionnaire, or being interviewed, or sharing views with others can be rewarding itself if the topic is relevant. In addition to creating a mutually satisfying process, I repay people with thanks and with concrete outcomes if I can: for example, inclusion in the Directory of New Hampshire Women Business Owners or scores on the Learning Style Inventory and help in interpreting them. Collaborating with others in interpreting and applying results is for me a joy and a necessity. Perspective transformation is a shared activity.

Standards of Scholarship

My work is interdisciplinary, applied, theoretical, eclectic and synthetic. I use methodologies from social and clinical psychology, anthropology and organizational behavior: action research, survey research, psychological tests, individual and group interviews and participant observation. The end goal, however, is a synthesis beyond the methodologies. This creates within myself a constant source of tension. I imagine multiple audiences, and there is always some audience for whom the work is too theoretical, too applied, or whose assumptions about the nature of knowledge have been violated.

A recent paper provides a useful illustration. Jean Bartunek and Judith Gordon, professors of management at Boston College, and I have collaboratively written a paper called "Teaching Administrators to Complicate Themselves" (Bartunek, Gordon, & Weathersby, 1980a). The paper grew out of an intensive workshop we conducted with national administrative teams from the Religious Order of the Sacred Heart. In the workshop, we designed a process to explore applications of adult development theory, career development, and notions of organizational socialization and change to the order's practices of inducting new members, and guiding their work choices and personal development over a lifetime. Our paper, which describes the rationale and activities of the workshop, is simultaneously too "theoretical" (but we made a conceptual breakthrough in relating theories of cognitive complexity and problem solving to stage theories of adult and organizational development), too "programmatic" (we describe our teaching

designs), and not "empirical" enough (we couldn't measure the outcomes of our workshop precisely enough to publish in a journal of social change research). Yet the workshop was phenomenally successful, and I "saw" something happen. We created a context and series of activities that enabled participants to see the religious issue of "formation" from the perspective of several recent theories of individual and organizational development. This perspective change created a new base for policy and problem solving. Several administrative initiatives were changed in tone and substance because of this new understanding.

In my judgment this is good work. In terms of standards, I require the best I can do within my own framework. I want a sense that what I do and write is on the "cutting edge" of a vision. Or, alternatively, that it illumines a vision that the people with whom I'm working don't yet have, even if others have encountered similar notions long ago. Further, I have developed a sense of humor and humility about my sense of standards. What kind of academic standards can you have for transformational magic? The images have to cohere, and communicate--if someone else says "aha," or uses my work, or it creates relationships for me and evolves into still more work that has the feel of integrity, I am satisfied.

Influencing Other Researchers and Practitioners

My attempts to influence others arise from my conviction that results do not influence apart from a network of relationships, or

the power of an idea. Results do not influence me. Relationships and ideas do.

I respond to requests to speak at meetings, collaborate on workshops, and write for informal forums that I know will have wide distribution--for example, the annual meetings of the American Association for Higher Education or the Academy of Management. I also seek those opportunities out, and design them into projects that I undertake. I consult on the phone with people who are interested in something I have done. I respond poorly, and very late, to letters. I respond to requests for copies of articles I have on hand. I feel pleased when someone uses my framework, or replicates a study, or bases a workshop on my materials. Otherwise, I am singularly neglectful of attempts to influence others with the results of my work. In my mind, ideas and contexts speak for themselves.

Protecting Time for Intellectual Work

Merging the worlds of action and disciplined inquiry is a frustration as well as a choice. It is difficult to find the time and space for intellectual work when there is so much else to do. I should do better; I teach time management seminars as part of my business school faculty role. I plan two days a week for intellectual work, but that is not enough and I have difficulty protecting them. Also, I involve myself in so many things simultaneously (at this moment: two papers, an ongoing study, a seminar series, an ongoing consulting commitment and two one-time workshops) that

progress on each is limited. I think I'm saved in this regard because I make it a point to meet commitments. Recently I have been writing, speaking, or developing workshops according to specific deadlines. With each new project, I try to push my thinking a little further. But I do not have time to really pursue intellectual work as I'd like. Partly, I prefer to work collaboratively, and that takes more time and effort.

I have more time than others, perhaps, because I am single and without dependents. I can be extremely flexible in how I use my time. Space is also no problem. I have an office at home and one at the university. Psychological space is more of an issue. I need large blocks of time, some pressure-filled and others free of pressure, and also colleagues who share similar visions and struggles.

In terms of "how to," I think I protect myself again through relationships at home and across the country. I have people I can call when I need a quick critique, or an opinion. Usually, they are the same people who ask me to collaborate on an event or an article. Because I make good on commitments to people, my intellectual work gets done, and my life is richer for it.

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THE CREATIVITY OF BEING MARGINAL:
A STYLE OF GENERATING RESEARCH IN EDUCATION

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Forces That Shape Specific Research Questions

Much of the challenge and excitement in doing intellectual work -- original research in education -- arises for me through the juxtaposition of contrasting methods, styles or disciplines. In my experience, creativity stems from confronting incongruities and generating ways to integrate them into larger wholes. While this is a personal viewpoint, I think it finds confirmation in a considerable literature on thinking and problem-solving. This is based on the work of Piaget (Flavell, 1963), Wertheimer (1949), Hutchinson (1949), Gordon (1961), and others. What I mean to say by the title of this paper is that being "marginal," in the sociological sense of standing at the borders of several worlds, ensures me a continuous supply of incongruent experiences as grist for fruitful research ideas.

For example, it occurred to me recently that I have taken this sort of bridging stance in every intellectual and career-related role I have had. Both my undergraduate and graduate degrees were in interdisciplinary programs (spanning the social and behavioral sciences), and the three major jobs I have held have all been joint appointments, split between departments with somewhat different goals and perspectives.* Once, for a brief time, due to

*The specific areas have included Psychology, Organizational Development, Applied Policy Sciences, Student Counseling and Psychotherapy, Information and Library Studies, and Teaching Development.

some confused administrative decision-making, I even held three half-time positions simultaneously on the same campus! While one might well ask why I make my life so complicated, I feel that the gains have much outweighed the difficulties. I am also sure that, if I were writing this paper from my "clinical psychologist" perspective, I could provide personal, developmental reasons why a bridging or marginal role is comfortable for me; but that is another story. In terms of present-day results, it is precisely the mixture of fertile incongruities that makes me productive.

What specifically are these incongruities or mixtures? Some themes are described in the following sections.

The Combination of Pure and Applied

Much of my work, both as a psychotherapist and educational development practitioner, has involved an attempt to meld these often very disparate approaches. Ideally, this should be a real synthesis, not an awkward marriage. I think that in psychology, action settings can be used to generate some of the most profound theoretical issues just because what is humanly important (and therefore worth taking action about) is also often very relevant conceptually as well. This means that when I pick immediately practical issues to research, I try to select from among the endless array of possibliities those which are connected to some broader conceptual questions; and conversely, I'm happiest when I can approach problems of implementation (intervention in consultation or psychotherapy, for example) on the basis of a consistent theory or set of research evidence. As you might imagine, I'm particularly fond of Kurt Lewin's comment that "the best way to understand something is to try to change it."

One fruitful combination of pure and applied involves adapting research instruments to serve as workshop training exercises. The research "subjects"

become collaborators: they study some aspect of educational process, learn about themselves, and see that the teaching situation is one which can be studied and influenced. For example, in one project I used George Kelly's Role Construct Repertory Test (Kelly, 1955) to examine instructors' internal and external models for good teaching and the changes which occur with experience. We use the test in workshops by asking participants to fill out and discuss a simplified version of it in order to enhance awareness of how they conceptualize their own and others' teaching behavior. Another use of this approach stemmed from several studies I conducted with the Grasha-Reichmann Student Learning Styles Scales (Andrews, 1981a & b; Reichmann & Grasha, 1974), which showed how the match or mismatch between student style and teaching method affects learning. We turned this instrument into a workshop activity by asking participants to fill it out as they were when they were students. We then grouped those with similar styles together, and asked them to tell the whole group what sort of teaching their type of student would prefer.

Interplay between the Personal, Experiential, and the Public "Objective," Aspects of Events

As a consultant or psychotherapist, I often find myself emotionally involved in relationships with clients of one sort or another and acting on the basis of hunch or intuition. Yet at the same time I am committed to reaching objective conclusions, testing hypotheses, and acting on the basis of evidence rather than what may at bottom be myth or prejudice. It does no good to sacrifice either end of this polarity. To the contrary, I feel the most productive when I can crystallize my intuitive, personal reactions into something more systematic -- or when those same hunches turn out to have more of an implicit framework underlying them than I had realized. My

own allegiance in this dilemma is well expressed by a sign I once had in my office. Hung so that it was free to revolve, it had on one side this statement by psychological theorist George Kelly:

> Man looks at his world through transparent patterns or templets which he creates and then attempts to fit over the realities of which the world is composed. The fit is not always very good. Yet without such patterns the world appears to be such an undifferentiated homogeneity that man is unable to make any sense out of it. Even a poor fit is more helpful to him than nothing at all. (Kelly, 1955)

And on the other side, this poem by e. e. cummings:

> while you and i have lips and voices which
> are for kissing and to sing with
> who cares if some oneeyed son of a bitch
> invents an instrument to measure spring with?
> (Cummings, 1979)

Surely these two stances, each with its place in the scheme of things, express the need for an interplay between "right brain" and "left brain" thinking.

The Clinical and the Experimental

A familiar polarity in the realm of psychotherapy, also applicable to teaching and consultation, involves the distinction between developing a holistic formulation of a complex situation -- such as a case formulation or a characterization of classroom atmosphere based on observation -- and making a step-by-step or single-variable effort to identify causal relationships by means of experimental controls. People taking the clinical approach often find that their ability to make predictions is less than they had estimated (Meehl, 1954), while the more rigorous method often leaves one contextless; with some well-verified propositions which become dubious when generalized to new situations or when removed from isolation and replaced in the complex welter of reality (Cronbach & Snow, 1977).

One sphere in which I have confronted this dilemma is the use of impressions and data in assessing student response to teaching (Andrews, 1977). Informal observations are often rich and evocative, but hard to verify; and questionnaire data are clear and comprehensive, but limited in focus and somewhat sterile. We have been experimenting with how to enrich the interplay between these two. First, we do this by feeding questionnaire information back to the class which generated it, and then using the numbers as starting points for more informal and open-ended discussions of how to improve instruction. For example, one might pick out certain questionnaire items on which dissatisfaction was high, and ask students to suggest some new approaches; or select ones which showed a polarization of student reactions and hold a discussion about the differing perceptions involved. We also work in the opposite direction, by holding informal discussions with the students (usually when the instructor is absent), and then during the course of the meeting gradually crystallizing the group "consensus" into a series of propositions which can be checked by hand vote or by a written questionnaire tailor-made for that particular class. I find that conducting such sessions is very exciting and draws on my ability to shift rapidly from the clinical to the quantitative and vice versa.

Interdisciplinary Interactions

As I mentioned above, most of my professional training has been in interdisciplinary programs, and I often look for research problems which lie at the intersection of two or more fields. Perhaps this helps explain my fascination with aptitude-treatment interaction studies. Such work intersects personality psychology, cognitive psychology, the social psychology of small groups, and educational methodology in the study of how individual characteristics influence the ability to learn in various educational

settings (Cronbach & Snow, 1977). I have a parallel interest in how teachers' personalities affect their interactions with students and constrain their freedom to adopt various specific teaching methodologies. I explored this latter issue most deeply in one paper (Andrews, 1978), co-authored with a teacher who was simultaneously a client in psychotherapy and in teaching improvement consultation.

Extending Practiced Skills into Novel Settings

This way of generating interesting incongruities involves riding a familiar horse into new landscape. Sometimes this means moving across related disciplinary boundaries, as when I discovered that skills learned in conducting family therapy gave me a foothold in functioning as an organizational development consultant. In other cases, it means using generalist skills to work at a "process level." For example, my initial forays into educational consulting worked because I had a general sensitivity to interaction processes, which could be applied to classroom dynamics, and because I knew how to design participative workshop activities appropriate for a wide variety of different specific issues. These generalist skills gave me an initial wedge into education, particularly where the subject area was alien or unfamiliar, and gradually I was able to turn this experience into specific hypotheses which could be tested by research.

For example, I recently completed a research project in chemistry, stimulated by the instructors' concern over student passivity. I began by observing teacher-student interactions, and by participating in them myself as a very ignorant (but non-passive) learner. From this we generated a discovery learning format, and compared it experimentally with the standard expository method (Andrews, 1981b). This was carried out in a "real life" pre-exam review session, and showed the superiority and practicality of the

new method. There was also an aptitude-treatment interaction, in that self-described "independent" students had the highest quiz scores in the discovery session while "dependent" students learned better from the expository approach.

I might sum this up by saying that for me, intellectual productivity is like an arc of electricity between two poles. These poles must be just the right distance apart to produce a Zap! If they are too close together, we get current business as usual; connections are made but they don't produce much that is interesting. And if there is too much disparity, no opportunity arises for a flow to occur. This notion reminds me of the title I gave a recent article: "The Psychotherapy Neurosis: How Bugs Eat DDT" (Andrews, 1979). The first "pole" of the title is conventional and formal in tone; the second is puzzling, evocative, metaphorical. What is the connection? This creates a buildup of intellectual "charge" which is released as the reader pursues the first few pages of the article. The two halves of the title reflect two types of thought ("left brain" and "right brain"?) and the reader gradually sees that this whimsical incongruity expresses a quite precise parallel involving the boomerang effects of two types of problem-combating methods (psychotherapy and pesticides).

The Creative Process

If the first stage of intellectual work involves setting up productive incongruities, a deliberate posing of thesis-antithesis tensions, then the second stage moves toward synthesis -- a resolving of these tensions in a way that leads to new creative combinations. Seen from this standpoint, the elements sketched above become criteria for defining productive, applied-research questions; the resultant products should simultaneously contribute to the action and research endeavors defined by those elements. Here are

some characteristics of such problems.

Theoretically and Conceptually Significant

It should shed some light on an issue of learning or communication. Thus I try to define such questions with an eye to existing theoretical formulations, and frame them in such a way that they will extend or test such assumptions.

Applicable and Usable

The adage, "There is nothing so practical as a good theory" comes to mind here. Teachers need to make basic concepts about teaching and learning a part of their own personal construct systems, and one of the best ways to do this is to provide new or improved teaching methods that are also well-rooted theoretically.

Of Direct Concern to the Setting in Which I Work

This involves the active participation of teachers and/or students, in such a way that the "research subjects" may also be "collaborators." The system under study is in effect engaging in a self-study process. Thus the researcher-subject dichotomy is overcome at least in part.

Amenable to Formal Research Procedures

Conclusions which can be documented scientifically are at once the most valid and the most credible with scholarly-minded faculty. I have found it important to blend the contextual emphasis which is essential to application with the scientific experimental-control paradigm, since the latter often has a one-variable-at-a-time emphasis which does not translate well into use by the practitioner. This blending often involves correlational analyses of naturally occurring events, content analysis of spontaneously produced materials, and aptitude-treatment interaction research.*

*A similar orientation to criteria of scientific validity has been suggested by Cronbach and Snow (1977) in their call for "experimental case studies" in which the effects of many simultaneously interacting variables can be assessed.

Dissemination and Application

As a teaching development practitioner, I have evolved an approach to disseminating research results which blends many of the ingredients described above; the "bridging" approach helps make this communication effective. The method, which I will illustrate below, usually begins by identifying an issue which is simultaneously a campus concern and a conceptually interesting question. Such issues are ripe for a "Research and Development" effort in which new teaching approaches can be studied and then made available on campus. The problem should be defined in such a way that local faculty and TAs can identify with it and compare their own teaching with the published results. In this sense we are involved in an institutional self-study activity which taps instructors' curiosity about themselves and their colleagues. Communication of conclusions takes place via a newsletter which presents them in non-technical, implementable form, via workshops focused on the topic in question, and as an element in the consultation process.

Assessing Student Understanding

This project began with the observation that our relatively sophisticated Course and Professor Evaluation (CAPE) system generates an enormous amount of data about faculty each year, most of which is not used for teaching improvement purposes. This is partly due to uncertainty about how to apply the information, partly to indifference, and partly to the weak credibility of student evaluations in some instructors' eyes.

I decided to use this information to pinpoint a key teaching issue on campus, to test the validity of the student rating data themselves, and to create a starting-point for identifying teaching improvements. Examination of the 17-item evaluation form showed a considerable variation of item means campus-wide, and I selected a single item which was among the very lowest rated

group and also seemed amenable to improvement efforts. This question asked students to rate the extent to which the professor knows if students are understanding the material, and it seemed to me that this was not only a key ingredient in effective communication of knowledge, but also an important aspect of good student-faculty rapport. Naturally, it is disturbing that this rating was among the lowest.

On the basis of CAPE data, we identified some variables, such as class size, which affected this rating independently of the professor's teaching. Then we located those faculty, who even in relatively large classes, had excellent ratings on this item, and arranged to interview a number of them about the techniques they used to assess student understanding.* The idea of obtaining a contrast or control group was dampened by the realistic difficulties of doing applied research: It seemed tactless to approach faculty at the low end of the scale in order to ask them what they were doing, or not doing, to elicit poor ratings!

Having obtained information about teaching techniques via open-ended interviewing of faculty, we cross-checked these data by visiting a number of the same teachers' classes, and asking their students to describe on a questionnaire form what the instructors did to keep in touch with students' understanding. We also conducted telephone interviews with a number of randomly selected students, asking them to describe the methods of those instructors whom they would rate highest on the same CAPE item. These three "triangulated" sources of data yielded some common themes which I combined via content analysis. Rigor in the study was enhanced by having three independent sources of information but was weakened through lack of a comparison group. Yet on balance, there seemed reason to believe that the CAPE ratings -- on

*This is similar to the procedure developed by Jacoby, Wilson, and Wood (Jacoby, 1976).

this item at least -- did correlate with some distinctive types of teacher behavior.

On this basis we wrote up a newsletter article which stressed the sorry state of teacher-student communication as indicated by the ratings, described the research structure of the study, gave some of the background findings, and listed a variety of teaching techniques which seemed likely to enhance the professor's awareness of the students' level of understanding. I hoped this would enhance the credibility of the CAPE ratings; stimulate interest among teachers -- since colleagues were the subjects of the study and since faculty could compare their own published CAPE results with the research findings; and provide some alternatives for instructors who wanted to improve their performance.

Student Participation in Discussion

A second project (Andrews, 1980a) developed from the widespread concern expressed to me in workshops and consultation meetings, about "getting students to participate." While of course everybody wanted good quality comments about relevant points, the gut concern seemed to be with preventing those excruciating silences in which discussion dies out altogether. Once you get people saying something, you can then begin to shape discussion in the right direction. I decided that the first goal should be to study ways of getting more discussion "mileage," and I found that my intuitive sense of "discussion quality" could be boiled down to a set of simple objective indices by which to evaluate teacher questions. These consisted of counting the number of separate student responses, the number of student-to-student responses, and the number of student participants which followed each question. Bearing in mind such concepts as Guilford's (1962) distinction between convergent and divergent thinking, and Bloom's hierarchical classification

of cognitive levels (Bloom, et al., 1956), I began listening for themes which distinguished questions with different "mileage" ratings. This led eventually to a content analysis coding scheme with good inter-rater reliability which confirmed some hypotheses about question structure. These results, all drawn from videotaped classes on our own campus, were written up in newsletter form with prescriptive suggestions about how to increase discussion participation. The research results also served as the basis for a workshop exercise, in which participants reproduce inductively the categories of the content analysis system.

Transition from Student to Teacher

The third endeavor began with a conceptual issue: the theme of transitions in adult development (Gould, 1978). In preparing a conference paper on the topic (Andrews, 1980b), I focused on a significant transition in the lives of the Teaching Assistants with whom I work. This is the shift from student to teacher, which is complicated by the fact that as a graduate student one does not really leave the student role behind in becoming a TA. To explore changes in attitudes and self-concept during this process, I drew on a well-developed clinical research instrument, George Kelly's Role Construct Repertory Test (Kelly, 1955). Using this it was possible to conduct a reasonably well-controlled study of how self- and role-perceptions develop with increasing teaching experience.

Part of the appeal this test has always had for me is its self-reflective nature. Because it is essentially a sorting and concept formation task involving one's "significant others," the test procedure itself often leads the subject to interesting new insights about himself or herself. Thus the collection of data can become a self-study procedure that helps the TA to deal with a professionally significant issue.

In this project, the combination of research findings with the self-awareness effect enabled me to generate a new training activity, disseminated through newsletter and workshops for Teaching Assistants. This involved completing an abbreviated form of the research instrument, and analyzing it in terms of self-image and the conceptual "lenses" through which the individual views the teaching process. Since these concepts tend to limit how one can perceive important situations, the final stage of the activity involved "consciousness expansion": the participants borrowed each other's "lenses" and categorized their own teaching selves according to these fresh dimensions. Those who participated felt this helped them see new alternatives regarding some familiar personal and professional dilemmas.

In Conclusion

Despite what is said in formal expositions of scientific method, research creativity is a very personal matter and involves intuitions, idiosyncratic needs, individual stylistic patterns, and emotion-laden preconscious thinking. Studies of the creative process are full of accounts that stress such non-linear, unsystematizable mental leaps. While it is impossible to come up with a formula for generating productive research, it is feasible -- and vital -- to establish the conditions under which such sparks are most likely to arise. What I have sketched in this paper is a picture of the conditions which work for me; if they are transplantable, and thereby usable by someone else, so much the better.

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THE PATH OF PASSIONATE INQUIRY:

A COMMENT ON SMITH, YOUNG, WEATHERSBY AND ANDREWS

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These are stories of four researchers struggling with tasks for which there can be no formal preparation. Young, Weathersby, and Andrews share a background in behavioral research with its reigning paradigm of theoretical pluralism, a paradigm which avoids efforts to resolve incompatibilities and abandon weak or untenable theories. Smith does not share this background. A mathematician turned educational researcher, Smith was raised in a paradigm of pure theory and research and had to discover for himself the paradigm on which Young, Weathersby, and Andrews were bred.

The Outsider's Journey

Smith's paper provides an illuminating perspective on an outsider's path to the heart of a new field. While all four authors are engaged in the life of action ("joining the worlds of contemplation and action"), Smith had to experience an actual rift between the theoretical scientist in him and his new role of a guide to teachers' behavior. His journey from "applying the pure to purifying the applied" brings out sharply issues that recur in debates about the nature of problems in social sciences versus those in the physical sciences. The crux of the matter is not that problems are so different, although they very likely are, but that they have been pursued in such distinctly different ways.

Let us retrace Smith's steps in assisting faculty to improve the quality of teaching and learning.

Step 1. Searches for a relevant theory of learning and teaching.

Step 2. Takes a course which introduces him to the "state of the art"; it dawns on him that there is no theory that for him is both a theory and relevant.

Step 3. Finds cognitive psychology and information theory; these appear to satisfy his criteria of "relevant theory" except that they lack direct applicability to assist faculty in improving the quality of their teaching.

Step 4. Turns to psychology and learning theory as the basic science to feed instructional psychology, unaware (as an outsider) that cognitive psychology and information theory were the most recent developments in the field.

Step 5. Despair: "My basic approach had been severely shaken." "Perhaps I had come from mathematics with the wrong paradigm. I was looking for answers that didn't exist." "I was beginning to wonder if teaching was more an art than a science."

Step 6. The rift: He moves from the extreme of "hard" and "semi-hard" science to "super-soft" experiential learning. From rigor of theory to the live current of his own critical awareness: "I was learning by experiencing and by analyzing my experience."

Step 7. Revelation: The real problems and possibilities of learning are attached to the fact that teaching and learning occur in groups, a fact not addressed by theories of learning. Group process (social participation) engages affect (experiencing).

Step 8. Is struck by the significance of learning by doing and by carefully studying one's experience of it. The interplay of action and reflection, of the concrete and of the abstract.

Step 9. Becomes aware of the reality of individual differences: There are distinct styles of learning and knowing which are stable and specific to individuals.

Step 10. Resumes the search for theory but with a new direction, for any theory anywhere that would accommodate his new perception of what is essential to the work on improving teaching. There are echoes of the despair in Step 5: "I was depressed by the overwhelming number of models, approaches, and perspectives. I was looking for a theoretical framework which would help me make sense of all these various theories."

Step 11. Finds the relevant theory: Attribution theory, a social behavior theory of attitude formation, i.e., of forming judgments on causes, motives, abilities, and so on, from limited information, filtered and altered through the individual's own perspective (experiential history).

Step 12. Quest for research methodology to test the fit of his model--attribution theory as translated to teaching--with the facts. The case study approach turns out to be the most appropriate methodology.

The Shared Journey

If we now compare the steps of Smith's journey with those told by the other three, we find interesting parallels. In regard to the early search for theory (Step 1), perhaps only Weathersby shares it with Smith. For her the relevant theory was adult development and theories of transformation.

For Andrews, who thrives on bridging incongruities of the pure and the applied, Steps 1-4 are implicit. Because he desires to bring together the experiential and the objective and to bring the clinical and the experimental to bear on the complex task of improving instruction, he assumes implicitly the possibility of a relevant theory and the accessibility of formal research procedures. There are, however, differences of perspective. Andrews, Weathersby, and Young accept "the state of the art"; Smith finds it wanting. Young describes it well: "growing up intellectually and professionally in a milieu of varied and often competing theoretical positions and empirical interests," where "all are necessary but none are sufficient." For the insider Young, to be exposed to the extremes of this diversity was "good luck"; for the outsider Smith, it was a state of confusion breeding depression and despair (Steps 5 and 10).

But confusion bordering on despair can occur for a natural scientist as well. Wolfgang Pauli, a physicist and later Nobel prize winner, wrote around 1925: "At the moment physics is again terribly confused. In any case it is too difficult for me, and I wish I had been a movie comedian or something of the sort and had never heard of physics" (Kuhn, 1962, p. 84). The continuing confusion of competing theoretical positions in social science is not a function of their youth, as Smith states, but of inability or unwillingness to establish consensus about the central questions in their domain. Given such consensus, the competition would properly be fought under a criterion of the best empirical and theoretical resolution to each of these questions. It is easy to see why only Smith manifested despair.

What saved Andrews, Young, and Weathersby from despair was their ability to transcend enculturation. All four share a focus on the necessity of experiential learning (Steps 9-12). Andrews, in fact, runs the kind of

workshops that were the turning point for Smith. Each of them made personal discoveries. Weathersby discovered the effectiveness of relating experience developmentally. Young discovered that thinking and behavior must be considered in an integrated way and also that the context of a process is crucial (very close to attribution theory!). But Smith can be credited with discovering a phenomenon: the natural occurence that most significant human learning takes place in groups. In his appreciation of the properties of this phenomenon he also saw the teachers' response (willingness or reluctance) as an integral part that had to be accounted for.

The sense of phenomenon is as much missing from educational research as is a sense of theory. The phenomenon that struck Smith as essential is seldom addressed by theories and research on learning. The theory he found to be both relevant and rich enough to accommodate the experiential, the interactional, and the self-evaluative aspects of learning was a social theory, a theory about attitudes. Smith's discovery was aided by his status as an outsider, free of the enculturation which makes one accept the state of affairs rather than question its very foundations. Smith's background as a scientist is also important in the way it sharpened his search for discernible properties and a theory applicable to them.

Themes in Common: Teaching and Learning

These steps uncover certain recurrent themes and regularity of progression in the tanning process of our four heroes:

- the challenge of a complex task: to find ways of improving instruction, ways which work with diverse teachers;
- the acknowledgement that teaching and learning engage individuals in group situations, that the process is interactional and experiential;
- the conclusion that the teacher is also immersed in the dynamic of the group and so the teachers' own experiential flow is part and parcel of the whole;
- the necessity of immersing oneself in the phenomenon (process) while simultaneously subjecting it to careful scrutiny;
- the acknowledgment that no adequate knowledge of instruction and no adequate improvement is possible without the use of self;
- the necessity of seeking theoretical coherence for experiential knowing (subjective experience as a natural phenomenon accessible to objective formulation).

The convergence of the steps each followed is striking and can be stated very simply. Human learning is socially mediated; social interactions involve the participants' selves - their thoughts, feelings, motives, and manner of attribution; individualities of the participants constitute critical variables; experience has coherence, i.e., stability of form, therefore it can be studied systematically. This fits admirably with Margaret Mead's (1976) distinction of two sources of knowledge in regard to human beings: "It is necessary to recognize that our knowledge of ourselves and of the universe within which we live comes not from a single source but from two sources - from our capacity to explore human responses to events in which we and others participate through introspection and empathy, as well as from our capacity to make objective observations on physical and animate nature."

Themes in Tension: Science and Art

The coherent and inevitable form of their experience clashes with one of Smith's conclusions about teaching, mentioned in Step 5, a conclusion that is often heard: "It is not a science, therefore, it must be art." This usage implies that what we call "science" is well-defined, knowable, carried out by clearly specified procedures; hence, reliable, reproducible, and teachable. Seen as its opposite, "art" would thus mean an undertaking

that is ill-defined, unknowable, carried out by unspecified procedures; hence, unreliable, irreproducible and unteachable. Yet artists work extremely hard and with great concentration at what they are trying to produce, be it a dance movement, phrasing a melody, developing a character in a play or in opera, putting together a sculpture, painting a painting, writing a poem. The artist is guided by a very clear sense of what needs to be done, even though it often cannot be made explicit until the work is almost finished (Getzels & Csikszentmihalyi, 1976). This guiding conception, which Langer (1953) called "the commanding form," closely resembles the scientist's struggle with an unborn idea or image. Thus Darwin was guided in his work by the image of a tree of nature, an image that remained the one constant through several starts and erasures on how the process of evolution of the species comes about.

Procedures in art are specified. Every art has its school where people are trained, often more rigorously than in science laboratories. Art is reproducible either as a repeated performance, often of much greater exactitude than a scientific experiment, or as an imitation. Judgments of originality and aesthetic value are highly reliable if the judges are artists or art teachers (Getzels & Csikszentmihalyi, 1976).

If none of these distinguish art and science, what can that distinction be? It must be the subject matter. Science gives us explanations of the structure of the universe: matter, light, motion, minerals, forms of life, weather (not a very good job there!). Art does not deal with explanations, it presents human motives, passions, triumph or defeat; it expands our perception and awareness in every range in which we would follow it: the properties of space, light, sound, movement, human feeling. Art engages the self of the recipient; to contemplate art and savor it one needs to immerse oneself in it.

There is also a difference in language. There are no symbolic conventions by which a work of art can be decoded as mathematics, physics, and chemistry can be. Any formal language is discursive because it can be coded and manipulated according to certain rules. But the "language" of art is non-discursive because a work of art is an organic whole; it presents a complete Gestalt, the analys s of which is possible only after it has been apprehended as a whole (Langer, 1953). Its elements are understood only in relation to the whole work. Langer (1967) proposed that the manner of art is that of prescientific knowledge - the stage when impressions are distilled into an image, very much the way the physicists of Benjamin Franklin's times began to think of electricity as a fluid because their experience with electricity made it seem like something that flows.

Toward Resolution: From Image to Model

The path of scientific inquiry leads from experience to impressions and ideas, and then to putting these ideas to test. The process of forming impressions, or images, from experience is the basic process of abstraction (Langer, 1967). It is the path from knowledge of the particular to perception of lawful regularities (Allport, 1942). One of the dimensions in Kolb's model of experiential learning cited by Smith is: from concrete experience and feeling to abstract conceptualization and thinking. Young's image of this process is "tanning of hides" - turning a raw product into a functional and elegant material. His leading idea that thinking and behavior must be considered in an integrated way is embodied by the "third floor of Erickson Hall," the place where faculty of diverse, even totally opposing, views were housed together. The images that recur in Weathersby express her efforts "to translate vision into action" - grasping, pulling, and effectual power: "grasping the power of the gestalt," "a necromancer seizing

the power of an inward perceptual thread to transform outer reality," "designing instruction to pull developmental changes." Andrews' images are of bridging polarities and wedding incongruities, "standing at the borders of several worlds" to have "a continuous supply of incongruent experiences" in order to feed intellectual productivity which is "like an arc of electricity between two poles. These poles must be just the right distance apart to produce a Zap!"

An image is an intermediate step leading from the concrete to the abstract. We sometimes think that we can jump from the concrete to the abstract in one leap omitting the work of developing an image, but that is probably not possible. We must remember that the image is not necessarily visual, that every impression is that mental form to which we refer as, "it seems like...," "it feels like...." These are perceptions of qualities and any perceived quality can be expressed as an image, a metaphor, a comparison to a situation of experience that engenders a similar feeling.

When lawful regularities are established one can then proceed to the construction of explanatory models and theories. But the critical step is always formation of an image - the conversion of accumulated knowledge of the particular into its simplified analogue.

The impulse of Andrews, Young, Smith and Weathersby to approach faculty development and teaching improvement through experiential workshops and case study methods reflects their sense of respect for the <u>particular</u> since no knowledge is secure without it. "Not only is an initial acquaintance with particulars necessary for the construction of general principles, but in the last analysis no general principles can ever be applied except to concrete and particular objects. Thus, the individual case stands at the gateway and terminus of generalized knowledge" (Allport, 1942, p. 150).

Similarly Young: "The only way to identify all relevant variables and observe their interrelationships is to study a few cases a long period of time, in depth, and from a number of different perspectives. The emphasis should be on validity, not reliability, at least in the stage we find ourselves in the study of college teachers." The recourse to experiential training can be also viewed as a means of generating the particulars that would engender images, prerequisites for construction of models and more advanced conceptions. Thus are science and art joined.

One could say that Smith turned to experiential learning out of his passion for knowledge and discovery, as did Andrews, Weathersby, and Young, but with one difference. Smith did not have to go against a methodological paradigm that for several decades denigrated the particular as impressionistic, nonscientific, in short, as "art."

The most important lesson is that the improvement of teaching and learning lies in experimentation. Experimentation is not a means to arriving at a more fixed form of instruction but an end in itself, the very method of teaching. It is a discovery method that includes the use of self. Passionate inquiry is the best form of learning and the best form of teaching.

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